

Serial No. 09/729,833

REMARKS

Reconsideration of the application is respectfully requested in view of the reasons stated below. Entry of this Amendment Under Rule 116 is merited as it raises no new issues and requires no further search.

Rejection of Claims 51 and 63 Under 35U.S.C. §102 (e)

Claim 51 stand rejected under 35 U.S.C. §102 (e) as being anticipated by Chen et al. (U.S. Patent, No. 6,080,663) ; and further, Claims 51 and 63 stand rejected under 35 U.S.C. §102 (e) as being anticipated by Jeng et al. (U.S. Patent, No. 6,372,660) .

This rejection is respectfully traversed on the basis that Chen and Jeng do not disclose the features of the present invention. Applicant emphasizes again that "to form a dense region having an etching rate lower than that of said dielectric layer" is clearly described in independent Claim 51 of the present invention, so limitation from the specification can be read into the claims.

Furthermore, in the citations of Jeng, the first photoresist layer is used to form the via region, and the second photoresist layer is used to form the trench and the via hole, but this invention utilizes the first photoresist layer on dielectric layer to expose a portion of said dielectric layer where the trench region is defined. On the other hand, in this invention, the second photoresist layer is utilized to define a via region, but the damascene structure that has the trench and the via hole is formed after finishing the whole etching process, as described in the independent Claim 51 of the present invention.

Moreover, the examiner states that Jeng discloses that the dense regions 540/640 will be etched all the way through from the uppermost layer 560 to the surface of the lowest layer 500, so there is no reason that the intermediate layer 540/640 cannot be removed during the etching process to form the dual damascene. Applicant emphasizes again that the dense region 540 acts as etched barrier layer as shown in FIG.5A and described in the specification of the citation of Jeng, so the etching process is stopped on this etched barrier layer.

Applicant emphasizes that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore

Serial No. 09/729,833

& Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), 469 U.S. 851 (1984). Obviously, for the foregoing reasons, it is believed that the accumulation of elements from cited sources in such diverse art is insufficient to present a prima facie case of obviousness. There is no reason, suggestion, or motivation in the cited prior art, whereby a person of ordinary skill would not modify Chen or Jeng by any citation to perform the process of the present invention. For these reasons, and for the reasons discussed above, it is respectfully submitted that Chen and Jeng do not anticipate Claims 51 and 63 of the present invention and withdrawal of the rejection under 35 U.S.C. §102 (e) is respectfully requested.

Rejection of Claims 52-62 Under 35 U.S.C. §103 (a)

Claim 52 stands rejected under 35 U.S.C. §103 (a) as obvious over Jeng in view of Muller (U.S. Patent, No. 6, 207, 517) ; and further, Claims 53-62 are rejected under 35 U.S.C. §103 (a) as being unpatentable over Jeng and Muller as applied to Claims 51-52 above and further in view of Wu (U.S. Patent, No. 6, 127, 247) .

This rejection is respectfully traversed on the basis that there is no teaching, suggestion, or incentive supporting the citation, predominantly because the citations disclose the method for forming a dual damascene that is different from the present claimed invention. The method for forming the dense region, or implanting process, or the opening of the dual damascene that is formed by ion-implantation with two times are not the features of the present claimed invention. The features of the present claimed invention disclose that formation of a dense region with lower etching rate in the dielectric layer in order to protect the dielectric layer under the dense region from etching process, so as to form an opening of the dual damascene after etching the vertical that is not dense. That has not been shown in all citations.

Moreover, claims 52 to 62 depend from claim 51, and are patentable for at least the reasons advanced above with respect to claim 51. On the other hand, the recited terms and content of a claim are interpreted by deliberating the detailed description of the invention, if the detailed description has the definition and the related description thereto, or if the detailed

Serial No. 09/729,833

description has explicit disclosure even though the disclosure is not recited in the claim. Additionally, the drawing should be corporately deliberated if the drawing is included in the application. Withdrawal of this rejection is respectfully requested, and allowance of Claims 52 to 63 is earnestly solicited.

According to the cited references and figures thereof, the purpose disclosed in this invention is not achieved or accomplished by combining the processes of the cited references from each other. Rejections have been reversed because the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference as well as a change in the basic principle under which the primary reference construction was designed to operate." 123 USPQ at 352. Hence, the difference between cited references and the present invention is non-obvious. The citations do not disclose or suggest the purpose and features of the present claimed invention. In view of the foregoing, the features of the present claimed invention are patently distinguishable from the cited references. It is respectfully submitted that one of ordinary skill in the art could only have used hindsight to make the proposed modification. A rejection, which ignores the purposes of the prior art in the manner that an ordinary artisan would have perceived them, is not proper, as explained in MPEP 2143.01.

Therefore, for these reasons and the reasons discussed above, applicant respectfully submits that the Claims 52 to 63 of this invention are patently distinguished over all cited references. Withdrawal of this rejection under 35 U.S.C. §103 (a) is respectfully requested, and allowance of Claims 52 to 63 is earnestly solicited.

Conclusion

In light of the above amendments and remarks, applicants respectfully submit that all pending claims 51 to 63 as currently presented are in condition for allowance and hereby respectfully request reconsideration. Applicant respectfully requests the Examiner to pass the case to issue at the earliest convenience. Having thus overcome each of the rejections made in this Office Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Serial No. 09/729,833

To the extent necessary, please charge any shortage in fee due in connection with this filing to Deposit Account No. 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN GILMAN & BERNER, LLP



Randy A. Noranbrock
Registration No. 42,940

Date: January 13, 2003
1700 Diagonal Road, Suite 300
Alexandria, Virginia 22314
(703) 684-1111
(703) 518-5499 Facsimile
BJH:RAN:sbs

FAX RECEIVED

JAN 14 2003

TECHNOLOGY CENTER 2800